

Non-invasive blood glucose measurement Application of near infrared optical measurement

Abstract

In clinical practice currently, blood glucose is measured using an invasive techniques which is unsuitable and having risky of infection in the patient since the finger is pricked three to five times a day. In this study, near infrared optical measurement is applied to overcome the invasive issues. The designed device consists of an infrared emitter which placed over the fingertip for measurement of blood glucose optically. The near-infrared light will be sensed by the photo diode which having a certain wavelength. The intensity of received light is depending on the glucose molecules inside the blood. Ten subjects have been used during the experiment set. Early result is presented that blood-glucose level range starting from 6.3 to 11.5mol/L during normal non-fasting, voltage measured from the design device having of 1.4V to 1.66V and during fasting, the voltage range is about 1.38V to 1.61 V with reading of 4.7 to 5.5 mol/L. The prediction of blood glucose reading for 10 subjects also is presented.

Keywords — Near Infrared, blood glucose, optical measurement.